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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,508	04/09/2004	Osamu Nozawa	0524-0139.02	9824

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT PAPER NUMBER

1753

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/821,508

Applicant(s)

NOZAWA ET AL.

Examiner

Rodney G. McDonald

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1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 6-10 and 12-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-10 and 12-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Handwritten:* Paper No(s)/Mail Date 9/05 11/05.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 1/2005, 9/2005 has been entered.

### ***Allowable Subject Matter***

The indicated allowability of claims 6-10, 12-16 is withdrawn in view of the newly discovered reference(s) to Tu et al. (U.S. Pat. 5,714,285) and Yamanishi et al. (U.S. Pat. 5,626,727). Rejections based on the newly cited reference(s) follow.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6-10, 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tu et al. (U.S. Pat. 5,714,285) in view of Yamanishi et al. (U.S. Pat. 5,626,727).

Regarding claim 6, Tu et al. teach form a photomask blank having at least a thin film for forming a pattern on a transparent substrate. (See Abstract) The process comprises setting a substrate 22 in a horizontal position where a surface of the substrate and a surface of a sputtering target are in opposed positions with a center axis of the target deviating from the center axis of the substrate surface. (See Figure 5; Column 4 lines 4-35)

Regarding claim 7, the target and the substrate from a predetermined angle therebetween. (See Figure 5)

Regarding claims 9, 10, 12, the film is a phase shifting film produced by sputtering on a phase shift mask blank. (See Abstract; Column 4 lines 4-35)

The differences between Tu et al. and the present claims is that rotating the substrate around its center axis is not discussed (Claim 6), the rotation a number of integer times is not discussed (Claim 8), and the dispersion angle of the phase shift film is not discussed (Claim 13).

Regarding the rotating (Claim 6), Yamanishi et al. teach rotating a substrate holder when opposed to targets offset from the axis of the substrate and angled thereto. (Column 7 lines 17-31)

Regarding rotating a number of integer times (Claim 8), since Tu et al. teach depositing at a certain thickness. (Tu et al. Column 3 lines 12-15) The rotation suggested by Yamanishi must be stopped at a certain integer time. (See Yamanishi et al. discussed above)

Regarding the dispersion angle of the phase shift film (Claim 13), since Yamanishi et al. suggest rotation which creates a uniform film the dispersion angle produced in a phase shift film when rotated will be within applicant's limits.

The motivation for utilizing a rotating substrate holder is that it allows for controlling the uniformity of the thin film deposited. (Column 7 lines 17-25)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Tu et al. by utilizing a rotating substrate holder as taught by Yamanishi et al. because it allows for controlling the uniformity of the thin film deposited.

Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tu et al. in view of Yamanishi et al. as applied to claims 6-10, 12 and 13 above, and further in view of Mitsui et al. (U.S. Pat. 5,955,223).

The differences not yet discussed is the formation of a light semi-transmission phase shift film (Claim 14), the dispersion of a phase angle and a dispersion of a transmittance (Claim 15), and the light transmission phase shift film formed of metal,

silicon and nitrogen with the nitrogen content being higher than the silicon is not discussed (Claim 16)

Regarding claim 14, Mitsui et al. teach forming a light semi-transmission phase shift film by sputtering. (Column 8 lines 49-56)

Regarding claim 15, as discussed above by rotating the substrate one can control the dispersion of phase angle and dispersion of transmittance. (See Yamanishi et al. discussed above)

Regarding claim 16, the light transmission phase shift film can be formed of metal, silicon and nitrogen. (Column 8 lines 49-56) The nitrogen content can be more than silicon. (See Table 1 example 1b)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a light semi-transmission phase shift film with controlled dispersion phase angle and dispersion transmittance formed of metal silicon and nitrogen with more nitrogen than silicon as taught by Mitsui et al. because it allows for forming a semi-transmitting film.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rodney G. McDonald  
Primary Examiner  
Art Unit 1753

RM  
February 2, 2006